

US Application No. 09/491,527

Atty Docket No. 10990629-1

Page 3

an image capture system which provides a set of multiple images of a target feature location, each image of the set representing the target feature location following deposition of a corresponding sub-set of multiple droplets for that feature; and

a storage medium onto which the image set or an overlay composite of them are stored.

A2 28. An apparatus according to claim 27, additionally comprising a communication module to communicate the stored image set or an overlay composite to a remote user of the array.

#### Remarks

The Examiner is thanked for the Office Action mailed 11/09/01 (request for a 1-month extension to respond, enclosed). Claim 24 is canceled by the present amendment. Claims 19-23 and 25-28 remain under consideration in the present application.

The Examiner first rejected claims 21-26 under 35 U.S.C. 112, second paragraph, as being indefinite. The Examiner stated that claims 21-26 recite process limitations which do not clearly further define the claimed apparatus. Claim 24 has been canceled. Claims 21-23 and 25 have been amended to clearly recite that the processor will cause the recited steps to be executed. Claim 26 already recites that the processor actually does the storing or causes the communication module to act in the recited manner.

When a programmable processor is suitably programmed to carry out the recited steps, this creates a new machine with the recited limitations. This has previously been made clear for example, in *WMS Gaming Inc. v. International Game Technology* 51 USPQ2d 1385 (CA FC; 1999) @ 1391:

"A general purpose computer, or microprocessor, programmed to carry out an algorithm creates "a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform

US Application No. 09/491,527

Att'y Docket No. 10990629-1

Page 4

particular functions pursuant to instructions from program software." *In re Alappat*, 33 F.3d 1526, 1545, 31 USPQ2d 1545, 1558 (Fed. Cir. 1994) (en banc); see *In re Bernhart*, 417 F.2d 1395, 1399-1400, 163 USPQ 611, 615-16 (CCPA 1969) (" [I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged."). The instructions of the software program that carry out the algorithm electrically change the general purpose computer by creating electrical paths within the device. These electrical paths create a special purpose machine for carrying out the particular algorithm."

Thus, the addition of limitations to a claim which may be related to programming of the processor are apparatus limitations since each creates a "new machine".

Accordingly, in view of the above amendments and discussion, this rejection of claims 21-23, 25, and 26 should be withdrawn.

The Examiner next rejected claims 19-20, 22-24, 27 under 35 U.S.C. 102(e) as being anticipated by McGall et al. (US 6,238,862; referenced as "McGall"). Claim 24 has been canceled. First, with regard to this (and any other) rejection, the Examiner bears the initial burden of establishing a *prima facie* case of unpatentability. This has been made clear by the Federal Circuit in, for example, *In re Oetiker* 24 USPQ2d 1443 @ 1444 (Fed. Cir.; 1992):

"As discussed in *In re Piasecki*, the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant."

Furthermore, in order to establish anticipation based on a reference, it is well settled that the Examiner must point to every claim element in the cited reference. This has been made clear by the Federal Circuit in, for example, *Brown v. 3M* 60 USPQ2d 1375 (CAFC, 2001) @ 1376:

"To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim. *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383, 58 USPQ2d 1286, 1291 (Fed. Cir. 2001); *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991)."

US Application No. 09/491,527

Atty Docket No. 10990629-1  
Page 5

In the case of claim 19 the Examiner has not pointed to at least the following claimed element in McGall:

an image capture system which provides a set of multiple images of a target feature location, each image of the set representing the target feature location following deposition of a corresponding sub-set of multiple droplets for that feature

The Examiner relies upon columns 6-8, columns 11-13, and the claims of McGall for the foregoing elements. In columns 11-12 McGall does refer to a chip reader to "determine a signal generated from a detectable label on a chip" (column 11, lines 60-61). Such a chip reader is apparently applied to reading the signal from a label applied to all uncapped active sites on a chip, such that the amount of uncapped active sites in different areas (such as  $R_1$ ,  $R_2$ , and  $R_3$  in FIG. 2 of McGall) can be determined (column 7, lines 30-32 and 13-20). Each different site  $R_1$ ,  $R_2$ , and  $R_3$  has been exposed to an additional coupling step (column 6, lines 31-42). The amount of uncapped active sites "provides the coupling efficiency of the coupling step in the subsequent area" (column 7, lines 13-16). Thus, even if one used the described chip reader to obtain multiple images of the signal from the chip of FIG. 2 (which McGall does not itself disclose doing), each such image would be identical and would simply represent the image for each target feature location ( $R_1$ ,  $R_2$ , and  $R_3$  in FIG. 2 of McGall) following deposition of all drops for that feature (rather than each of the multiple images representing the target feature location following deposition of a corresponding sub-set of multiple droplets for that feature).

Note that the foregoing assumes the Examiner is contending that  $R_1$ ,  $R_2$ , and  $R_3$  in FIG. 2 of McGall are different feature locations. If on the contrary the Examiner is contending that  $R_1$ ,  $R_2$ , and  $R_3$  in FIG. 2 of McGall represent ONE feature location within the claim language (and this is not clear in the Action), this would still not satisfy the above claim limitation of "each image of the set representing the target feature location (combined  $R_1$ ,  $R_2$ , and  $R_3$  area) following deposition of a corresponding sub-set of multiple droplets for that feature". This is so since even if one captured multiple images of this combined area in McGall (which in fact McGall does not disclose), each such image does not represent that combined

US Application No. 09/491,527

Atty Docket No. 10990629-1  
Page 6

area following deposition of a corresponding sub-set of multiple droplets for that combined area.

As an aside it is noted that the other method in FIG. 4 of McGall of evaluating coupling efficiency does not even involve imaging the array but instead involves cleaving the labeled oligomers and analyzing the length of the so released oligomers by a method such as HPLC (column 8, lines 31-48). No additional methods are disclosed in the claims.

Accordingly, on the foregoing basis alone the Examiner has not satisfied her burden of pointing to every claimed element of claim 19 (and claim 27 which contains a similar limitation), and the rejection should be withdrawn for this reason alone.

In addition to the above, claim 19 further requires:

"a processor which generates an overlay composite from the image set" (each image of the set representing the target feature location following deposition of a corresponding sub-set of multiple droplets for that feature, as required by the preceding paragraph of claim 19)

The Examiner states that the "efficiency determination is deemed to meet the limitation of an overlay composite as information from at least one same location on the set of images is compared using some function". The Examiner basis this on the correct statement that in McGall "the disclosed method compares multiple sites with each other", then goes on to state that "nevertheless, it is clear that the same site is also compared against itself to provide an overall efficiency of oligonucleotide synthesis at the feature location".

First, as pointed out above each different site  $R_1$ ,  $R_2$ , and  $R_3$  which has been exposed to an additional coupling step, is indeed compared against each other to evaluate the efficiency of that coupling step. However, nowhere does McGall compare a same site against itself, such as a comparison of  $R_1$  with  $R_1$ ,  $R_2$  with  $R_2$ ,  $R_3$  with  $R_3$ , etc. Again, if the Examiner is contending that  $R_1$ ,  $R_2$ , and  $R_3$  represent ONE feature within the language of the claim, nowhere does McGall compare such a feature (i.e. combined  $R_1$ ,  $R_2$ , and  $R_3$ ) to itself. In either case, if the Examiner disagrees with this she is asked to point out specifically where such a comparison of a feature to itself takes place. Second, the above claimed element actually requires not just a comparison of a same site against itself to provide overall efficiency, but

US Application No. 09/491,527

Atty Docket No. 10990629-1  
Page 7

specifically that the processor generate an overlay composite from multiple images each representing a target feature location following deposition of corresponding sub-set of multiple drops for that feature. The Examiner has not pointed to anything in McGall where such an overlay composite from the multiple images is generated.

Accordingly, on this additional basis the Examiner has not satisfied her burden of pointing to every claimed element in the cited reference and the present rejection should be withdrawn for this additional reason.

Claims 20, 22, 23 are dependent upon claim 19 and their rejection should be withdrawn for the same reasons discussed above. Additionally, dependent claims 22, 23 contain additional limitations which are not disclosed by McGall but which need not be discussed at this time.

The Examiner next rejected claims 19-28 under 35 U.S.C. 102(e) as being anticipated by Fisher et al. (the Examiner referenced "5,232,072 but this will be assumed to be US 6,232,072; referenced as "Fisher"). The Examiner points to a number of features of the Fisher apparatus. However, the Examiner does not even attempt to point to the following elements of claim 19 in Fisher, namely:

- an image capture system which provides a set of multiple images of a target feature location, each image of the set representing the target feature location following deposition of a corresponding sub-set of multiple droplets for that feature; and
- a processor which generates an overlay composite from the image set.

Accordingly, the Examiner has failed to satisfy her burden of establishing a *prima facie* case of anticipation by pointing to every claimed element in the cited reference, and the present rejection should be withdrawn. As an aside, if the Examiner can indeed identify the foregoing elements in Fisher, Applicant will add claim 19 to the pending continuation of Fisher (Serial No. 09/772842) based on the Examiner's identification.

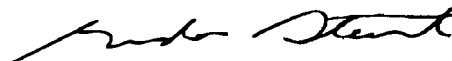
A

US Application No. 09/491,527

Atty Docket No. 10990629-1  
Page 8

In view of the above amendments and discussion, it is respectfully submitted that claims 19-23 and 25-28 are now in condition for allowance. If the Examiner is of the view that there are any outstanding issues which might be resolved by means of a telephone conference, she is invited to call Gordon Stewart at (650)485-2386.

Respectfully submitted,



Gordon M. Stewart  
Attorney for Applicants  
Reg. No. 30,528

Agilent Technologies  
Legal Department, DL429  
IP Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

10990629-1 Response 3-11-02